IS 11144 (1984): Method for determination of deformation load and breaking load of alpine skis [PGD 27: Mountaineering Equipment]

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Indian Standard (Reaffirmed 2001)

METHOD FOR DETERMINATION OF DEFORMATION LOAD AND BREAKING LOAD ON ALPINE SKIS

Mountaineering Equipment Sectional Committee, EDC 76; Ski Equipment Subcommittee, EDC 76 : 2 [Ref : Doc : EDC 76 (3431)]

1. Scope — Specifies a method for determination of the resistance of alpine skis to permanent deformation and breaking.

1.1 It is applicable to all sizes of alpine skis for adults, juveniles and children.

2. Definitions — For the purpose of this standard, the following definitions shall apply.

2.1 *Deformation Load* F_D — The load which, when applied at the load applied at the load application point, causes a permanent deformation of 4 mm of the ski between the supports.

2.2 *Breaking Load* F_B — The maximum load which, when applied at the load application point, causes failure of the ski (breaking, delamination, buckling, etc).

3. Testing Machine

3.1 The general arrangement of the bending testing machine is shown in Fig. 1.

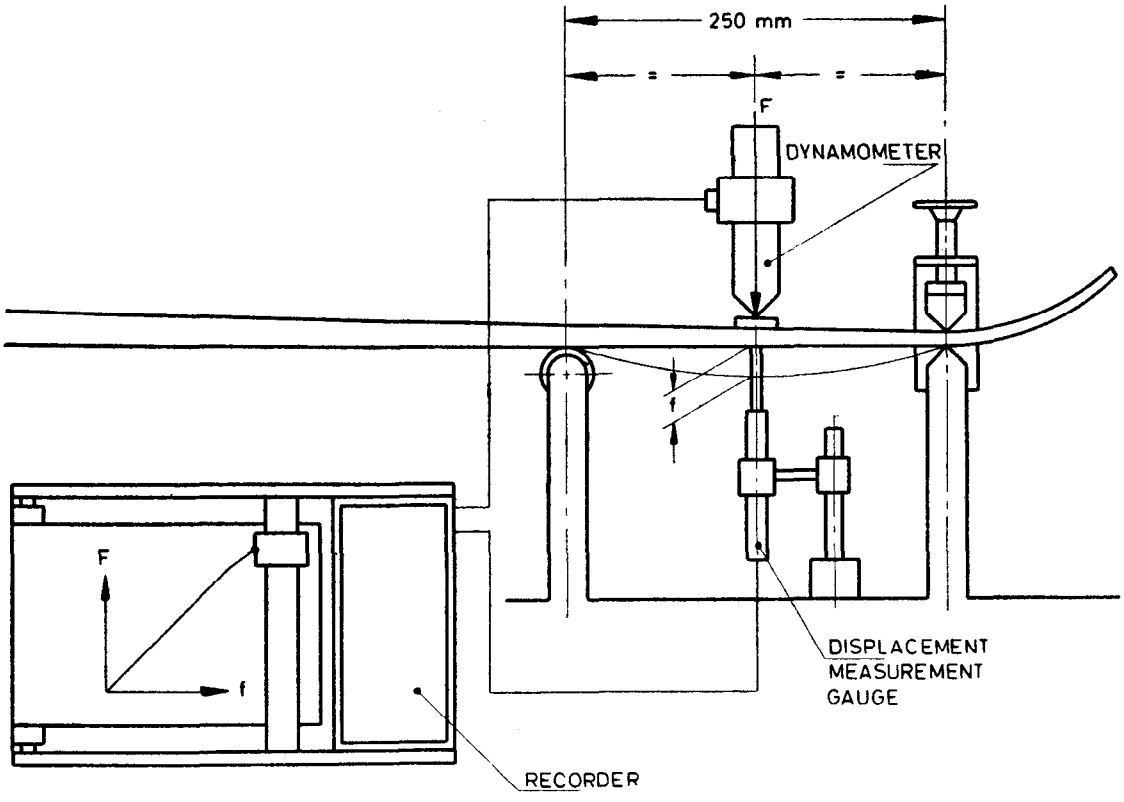

FIG. 1 TESTING MACHINE

3.2 The bending testing machine (universal tension and compression testing machine with bending fixture) shall comprise:

a) two specimen supports, at least 250 mm apart, at least one of which shall be a low friction roller;

b) a dynamometer, having a range of at least 20 KN, for measurement of the load, *F*; and

c) a displacement measurement gauge for measurement of the deflection, *f*.

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3.3 The load shall be applied to ths ski *via* a ram plate (*see* Fig. 2), which shall consist of a steel plate, 4 mm thick, and a hard rubber layer, 3 mm thick and having a shore hardness of 95 ± 5 (*see* IS : 7096-1981 Method for scleroscope hardness testing of metallic materials (*first revision*).

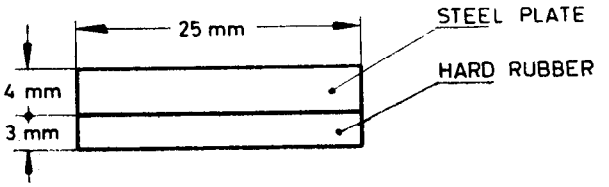

FIG. 2 RAM PLATE

3.4 The measurement data shall be recorded by means of a load — displacement recorder (*see* Fig. 3).

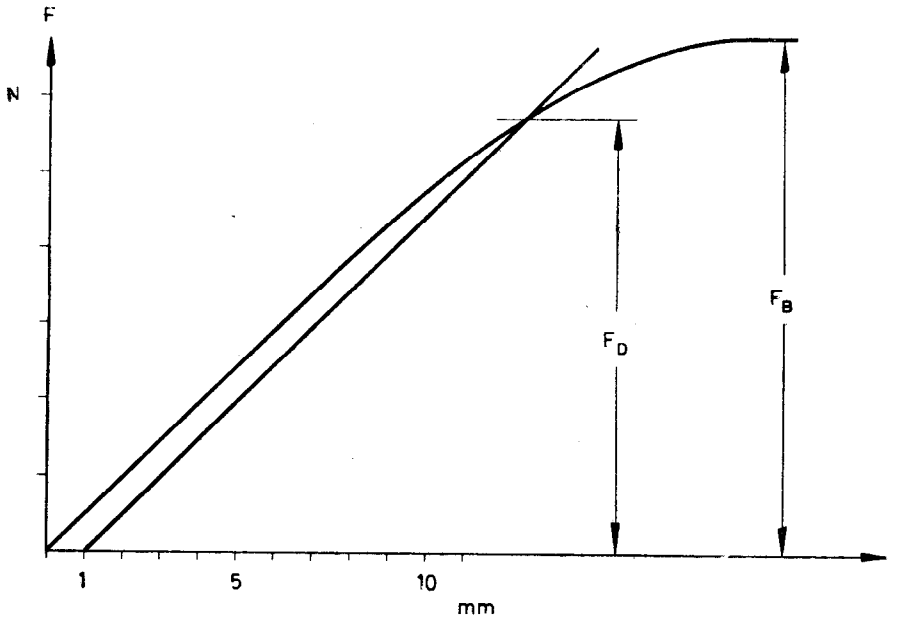

FIG. 3 TYPICAL LOAD — DEFLECTION CURVE AND METHOD OF EVALUATION

4. Determination of Load Application Point — In order to obtain comparable values, the test shall be carried out at that point on the ski forebody which has a bending stiffness of 300 N/mm ± 3 percent and with a separation between the supports of 250 ± 0·5 mm. The load-application point shall be determined by moving the ski in longitudinal direction on the supports until a deflection of 2·0 ± 0·03 mm is obtained under a load of 600 ± 5 N.

5. Conditioning — Conditioning of the ski shall be done at a temperature of 18 to 28°C.

6. Test Procedure

6.1 Insert the ski in the testing machine and fix it on the supports in such a way that the load application point is located midway between the supports.

Note 1 — It is important that the stiffness of the ski at the load application point lies within the tolerance range of ± 3 percent.

Note 2 — Testing at positions other than the load application point will result in false values for the deformation load and the breaking load.

6.2 Load the ski at a rate sufficient to increase the deflection by 25 mm/min, until the ski breaks.

6.3 Record the load deflection values by means of the load-displacement recorder.

7. Evaluation — Determine the deformation load and the breaking load from the load-deflection chart as follows.

7.1 *Deformation Load* — From the point on the abscissa corresponding to a 1 mm deflection, draw a straight line parallel to the linear portion of the load-deflection curve. The value of the deformation load, F_D, is given by the point of intersection of this line with the curve (*see* Fig. 3).

7.2 *Breaking Load* — The breaking load, F_B, is the maximum load measured during the test, that is, the maximum of the curve.

8. Test Report — The test report shall include the following information:

a) Reference to this Indian Standard,

b) Brand of ski tested,

c) Designation of the model,

d) Nominal length,

e) Manufacturer's registration number,

f) Load-deflection chart together with the deformation and breaking loads, and

g) Any deviation from the standard procedure and the reasons therefor.

EXPLANATORY NOTE

In the preparation of this standard, considerable assistance has been derived from ISO 6265-1980 'Alpine skis — Determination of deformation load and breaking load', issued by the International Organization for Standardization (ISO).

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